

this is so. However, all the other information on the biology of *Notaden nichollsi* supports the inference of Main *et al.* that successful desert frogs have aquatic larval life and are tolerant of high temperatures at all stages of their life history.

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STATUS AND DISTRIBUTION OF SOME SPECIES OF OWLS IN WESTERN AUSTRALIA

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In the second edition of Scrventy & Whittell's *Birds of Western Australia* (1951), the ranges of four of the species of owls occurring in the area dealt with are given as "state wide." About two years ago, in connection with a revision of the Australian owls, I began to examine museum material and published records of the four species concerned, and came to some rather unexpected conclusions as regards status and distribution.

Though full particulars will be published in my forthcoming revision, it may be useful to present the data hitherto assembled on Western Australia, in particular with a view to encouraging publication of field observations.

Boobook Owl, *Ninox novaeseelandiae*

The Boobook Owl has rightly been regarded as state wide in distribution; it inhabits both the forest areas of the South-West and Kimberleys and the most arid parts of the interior. It is fairly common throughout its range.

Winking Owl (Barking Owl), *Ninox connivens*

Of this species, originally I did not find any record outside the forested South-West and the Kimberley Division. At my request Dr.

Serventy went through his notes, and he also was unable to discover any evidence of the occurrence of the species in the huge intervening area. He amended the range accordingly in the third edition (Serventy & Whittell, 1962). Subsequently, however, I found a specimen from the De Grey River in the collection of the American Museum of Natural History, New York (collected by K. G. Buller), and one from the Ashburton River in the H. L. White Collection, National Museum of Victoria, Melbourne (collector not mentioned on the label, but specimen received from A. G. Campbell), so that the North-West of the state can be added to the range of the species.

Birds from the northern and the southern parts of the state are not identical. In the South-West, large and very grey individuals occur: the race *N. connivens connivens*. The Kimberley population averages slightly smaller, and can be distinguished by being brown in coloration rather than grey: the race *N. connivens occidentalis*. The two specimens from the North-West are identical with Kimberley skins.

While, judging from collected material, the species is not uncommon in the Kimberley Division, it seems to be very rare in the North-West and in the South-West. The Western Australian Museum, which has now been in existence for seventy years, has only three specimens from the South-West, a female from Herdsman's Lake, May 8, 1902, an individual of undetermined sex from Chillinup near Borden, July 1928, and a mounted female from Katanning, 1897, on display. In collections all over the world I have not managed to find more than six specimens altogether (these provided the additional localities: "Swan River," Lake Muir, and Stirling Ranges). Likewise, in the volumes of the *W.A. Naturalist* not a single observation has been published. However, in January 1963 a wing of an individual of this species was sent in by Mr. G. A. Lodge, of Boyup Brook, who found it dead on his property, and in view of the difficulty of observing nocturnal birds, the species may well be more common than the few published observations suggest.

At present it looks as if in Western Australia the Winking Owl is confined to the areas of forest and woodland savannah. There is a possibility that it ranges more widely than here indicated and that the lack of records from some areas is due to its general scarcity, but I regard this as unlikely.

Barn Owl, *Tyto alba*

The Barn Owl is state wide in distribution, though it seems to be rare in the heavy forest belt of the extreme South-West. Further discussion of its status follows below.

Masked Owl, *Tyto novaehollandiae*

Published notes as well as museum material show that the Masked Owl is strictly confined to the South-West, the extreme South-East (Nullarbor Plain), and the Kimberley Division, with one awkward exception discussed below.

Serventy & Whittell (1951, 1962) give the distribution of both Barn Owl and Masked Owl as state wide and mention that accord-

ing to specimens received at the Western Australian Museum since 1920, the Barn Owl outnumbers the Masked Owl by ten to one. A superficial examination of the museum collection would seem to confirm this, for there are over thirty skins of Barn Owls, as against only nine skins and two mounted individuals of Masked Owls. It may be mentioned that not all the Barn Owl specimens received at the Museum have been retained as study skins.

Closer scrutiny, however, reveals an interesting fact. The localities from which there are Barn Owls in the collection are the following: Albany, Baandee, Belmont, Beneubbin, Bridgetown, Bruce Rock, Burnerbinmah Station via Yalgoo, Canning Stock Route at Well 48, Coodingnew Station via Wiluna, Cunderdin, Katanning, Kurramia, Leederville, Leonora, Maylands, Merredin, Nalya, Northam, Perth, Pippingarra near Port Hedland, Pithara, Three Rivers Station on the Murchison, Wagerup, Woolonara. Localities for Masked Owls are: Albany, Beverley, Boyup Brook, Herdsman's Lake, Monger's Lake, Pinjarra, Tingellup (near Mt. Barker), Victoria Park, Wotjulum Mission (Kimberley Division), Yandil Station via Wiluna, Yealering. These locality records show that the Barn Owl is widely distributed. It is common in the wheat belt and is also the commoner of the two species in the Perth area. But when only the forested South-West is considered, the Masked Owl outnumbers the Barn Owl, the former being represented by five skins, the latter by two (Bridgetown, Wagerup). In the Serventy-Whittell collection are two skins of the Masked Owl from Bridgetown as against only one Barn Owl. As Dr. Serventy has pointed out to me, however, this sample may be biased, as Major Whittell would have regarded the Barn Owl as more common than the Masked Owl, and therefore was more likely to prepare specimens of the latter brought in to him, than of the former; nevertheless, it may be significant, especially as Whittell & Serventy (1948) were already aware that the Barn Owl is not common in the South-West. Information supplied by Mr. A. D. Jones of Manjimup, who over the years has inadvertently caught a number of owls in rabbit traps, is that these always were Masked Owls, and previously Carter (1923) regarded the Masked Owl as common, the Barn Owl as very rare in the extreme South-West.

For years the Masked Owl has been known from the Nullarbor Plain in South Australia, where it inhabits caves, and in 1962 Mr. D. L. Cook found the desiccated but recent remains of an individual in the Murra-el-ellevan Cave near Cocklebidy, thus extending the range of the Nullarbor population into Western Australia. The occurrence in a habitat so different from that in which the species is found elsewhere, is of considerable interest. Cayley (1931, p. 32) based on a specimen from Ooldea, Nullarbor Plain, the name *troughtoni*, thought to represent a distinct form which in literature has subsequently been referred to as the Cave Owl, but I cannot confirm this.

Summarising it may be said that, on evidence at present available, the Barn Owl is a bird of the more open country, which has probably recently followed settlement in the South-West; and that the Masked Owl is mainly an inhabitant of heavy forest and (in the

Kimberley Division) woodland savannah, which in the southern part of the state is confined to the lower South-West, where it outnumbers the Barn Owl, and the Nullarbor Plain.

The bird marked as coming from Yandil Station via Wiluna now needs attention. It was received from a Mr. A. G. Paterson and registered in August, 1924. Speaking from experience, I would say that there is a distinct possibility that Yandil Station is not the place where the owl was obtained (in those years it would have been difficult to forward a specimen from that area to Perth in a fresh condition), but was the address of its donor, who may have picked it up anywhere in the South-West and, on being asked where he lived when he handed it in to the museum, of course replied Yandil Station. On the other hand, in view of the occurrence of the Masked Owl in caves on the Nullarbor Plain, there is a possibility that the absence of records in interior Western Australia is due to its being rare rather than absent. It is also uncertain whether the distribution along the south coast is continuous. Only further observing can bring a solution.

A few characters for the identification of the four owls discussed in this paper may be given. The Winking Owl of the South-West differs from the Boobook Owl, besides in its larger size, by being essentially a grey bird. The Boobook Owl of the South-West is earth brown on the back, and rufous brown on the under surface. The Barn Owl and the Masked Owl differ in size, which, however, would not always be easy to judge in the field, and clearly in the colour and pattern of the back, which is rather smooth light grey, with a little bit of orange-yellow, in the Barn Owl, and boldly variegated blackish-grey and buffish yellow in the Masked Owl. The difference in appearance of the facial disc, described and illustrated by Serventy & Whittell, is not always clear and would be of doubtful value in the field.

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CORRECTIONS TO TYPE LOCALITIES OF THREE SPECIES OF WESTERN AUSTRALIAN STIGMODERA (BUPRESTIDAE, COLEOPTERA)

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Stigmodera (Castiarina) magnetica and *S. (C.) radians* were described by Carter (1933) with type localities Mount Magnet and Wembley, Western Australia, respectively, from two specimens of